

REMARKS

New claim 94 is added. Support for the new claim is provided by exemplary embodiments of the invention disclosed by the originally-filed application at, for example, page 9.

Independent claims 47 and 54 are rejected as being anticipated by Ding. Independent claims 1 and 10 are rejected as being obvious over the combination of Ding and Sahin.

Regarding the obviousness rejection against independent claim 1 based on Ding and Sahin, claim 1 recites wherein the gas comprises O₂, and wherein the hydrogen component and O₂ are provided in the chamber during the plasma etching at a volumetric ratio of the one to the another of at least 0.1:1 of O₂ to the hydrogen component. The combination of Ding and Sahin, singularly or in any combination, fail to teach or suggest this positively recited limitation of claim 1. During the interview of June 23, 2006, the Examiner agreed.

Accordingly, the Examiner agreed to withdraw the obviousness rejection against claim 1, and such agreement was confirmed on June 26, 2006. Accordingly, if no additional rejection against claim 1 is presented, claim 1 must be allowed.

Claims 2-3, 6-7, 62-66, 80 and 87 depend from independent claim 1, and therefore, are allowable for the reasons discussed above with respect to the independent claim, as well as for their own recited features which are not shown or taught by the art of record.

Regarding the obviousness rejection against claim 10 based on Ding and Sahin, claim 10 recites a gas comprises an oxygen component forming an oxygen and carbon compound mixture, and wherein the carbon compound is provided at from about 5% to

about 80% by volume of the oxygen and carbon compound mixture. Ding and Sahin, singularly or in any combination, fail to teach or suggest this positively recited limitation of claim 10. During the interview of June 23, 2006, the Examiner agreed.

Accordingly, the Examiner agreed to withdraw the obviousness rejection against claim 10, and such agreement was confirmed on June 26, 2006. Accordingly, if no additional rejection against claim 10 is presented, claim 10 must be allowed.

Claims 11-13, 16-19, 67-68, 81 and 88 depend from independent claim 10, and therefore, are allowable for the reasons discussed above with respect to the independent claim, as well as for their own recited features which are not shown or taught by the art of record.

Regarding the anticipation rejection against claim 47 based on Ding, claim 47 recites after the first plasma etching and with the wafer on the wafer receiver, **second plasma etching** at subatmospheric pressure using a gas having one or more components effective to etch photoresist from the wafer and polymer from chamber internal surfaces and getter halogen liberated from the polymer to restrict further etching of the material on the semiconductor wafer during the second plasma etching, the gas having the one or more components comprising at least H₂ and CH₄. During the interview of June 23, 2006, Applicant respectfully pointed out that Ding is directed to teaching chemistries for etching dielectric layers such as silicon dioxide (abstract; col. 3, lns. 49+) and does not teach or suggest a second plasma etching as positively recited. The Examiner agreed.

Accordingly, the Examiner agreed to withdraw the anticipation rejection against claim 47, and such agreement was confirmed on June 26, 2006. Accordingly, if no additional rejection against claim 47 is presented, claim 47 must be allowed.

Claims 48, 50, 53, 75-77, 84, 91 and 94 depend from independent claim 47, and therefore, are allowable for the reasons discussed above with respect to the independent claim, as well as for their own recited features which are not shown or taught by the art of record.

Regarding the anticipation rejection against claim 54 based on Ding, claim 54 recites after the first plasma etching and with the wafer on the electrostatic chuck, providing the electrostatic chuck at ground or floating potential while **second plasma etching** at subatmospheric pressure using a gas comprising an oxygen component and a carbon component effective to etch photoresist from the wafer and polymer from chamber internal surfaces, and gettering fluorine liberated from the polymer during the second plasma etching with the carbon component to restrict widening of the contact openings formed in the insulative oxide resulting from further etching of the material on the semiconductor wafer during the second plasma etching. During the interview of June 23, 2006, Applicant respectfully pointed out that Ding is directed to teaching chemistries for etching dielectric layers such as silicon dioxide (abstract; col. 3, lns. 49+) and does not teach or suggest a second plasma etching as positively recited. The Examiner agreed.

Accordingly, the Examiner agreed to withdraw the anticipation rejection against claim 54, and such agreement was confirmed on June 26, 2006. Accordingly, if no additional rejection against claim 54 is presented, claim 54 must be allowed.

Claims 55-57, 78-79, 85 and 92 depend from independent claim 54, and therefore, are allowable for the reasons discussed above with respect to the independent claim, as well as for their own recited features which are not shown or taught by the art of record.


Additionally, during the Examiner interview of June 23, 2006, Applicants respectfully pointed out that the motivational rationale presented by the Examiner does not exist. Applicants demonstrated that Ding is directed to teaching chemistries for etching dielectric layers such as silicon dioxide (abstract; col. 3, Ins. 49+), and is devoid of any teaching that a chamber clean is needed. The Examiner agreed. Accordingly, the Examiner further agreed there is **no motivation to modify the Ding process chamber by looking** to Sahin for meaningful teachings directed to cleaning reaction chambers with the purpose to modify the invention of Ding. The Examiner agreed to withdraw this motivational rationale for combining Ding and Sahin.

In conclusion, if no additional rejections are provided in a subsequent action, the pending claims are in form for allowance.

This application is now believed to be in immediate condition for allowance, and action to that end is respectfully requested. If the Examiner's next anticipated action is to be anything other than a Notice of Allowance, the undersigned respectfully requests a telephone interview prior to issuance of any such subsequent action.

Respectfully submitted,

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